

WHAT IS CLAIMED AS NEW AND DESIRED TO BE PROTECTED BY  
LETTERS PATENT OF THE UNITED STATES OF AMERICA, IS:

1. Apparatus for automatically serially applying a plurality of pavement markers to a roadway surface as a result of said apparatus being attached to a roadwork vehicle and thereby moving along the roadway surface with the roadwork vehicle,
- 5 comprising:
- conveyor means, comprising an upstream end portion disposed at an upper elevational level so as to be accessible by an operator disposed upon the roadwork vehicle for serially placing a plurality of pavement markers upon said
- 10 conveyor, and a downstream end portion disposed at a lower elevational level for disposition immediately above the roadway surface onto which the plurality of pavement markers are to be deposited, for automatically serially conveying
- 15 portion of said conveyor means to said downstream end portion of said conveyor means, for serially discharging the plurality of pavement markers from said downstream end portion of said conveyor means, and for serially depositing the plurality of pavement markers onto the roadway surface; and
- 20 applicator means disposed adjacent to said downstream end portion of said conveyor means for operatively engaging individual ones of the plurality of pavement markers, deposited onto the roadway surface by said conveyor means, so as to serially apply the plurality of pavement
- 25 markers to the roadway surface.

2. The apparatus as set forth in Claim 1, wherein said conveyor means comprises:

a conveyor belt movably mounted upon said conveyor means;

5 a plurality of carrier elements fixedly disposed at predeterminedly spaced positions along said conveyor belt for respectively seating the plurality of pavement markers thereon so as to serially convey the plurality of pavement markers along said conveyor means; and

10 conveyor belt drive means operatively connected to said conveyor belt for moving said conveyor belt along said conveyor means.

15

3. The apparatus as set forth in Claim 1, further comprising:

a wheeled vehicle comprising a vehicle chassis;

20 a pair of laterally spaced transport wheels mounted upon said vehicle chassis for permitting said wheeled vehicle to be moved along the roadway surface;

said lower downstream end portion of said conveyor means is fixedly mounted upon said vehicle chassis; and

25 said applicator means comprises a wheel applicator for rollably engaging individual ones of the plurality of pavement markers deposited onto the roadway surface by said conveyor means in order to individually apply the plurality of pavement markers to the roadway surface.

30

4. The apparatus as set forth in Claim 3, wherein:

said conveyor means comprises a pair of parallel conveyors; and

5 said applicator means comprises a pair of applicator wheels for respectively rollably engaging individual ones of the plurality of pavement markers deposited onto the roadway surface by said pair of parallel conveyors in order to individually apply the plurality of pavement markers along a pair of lines simulating traffic lane lines of de-  
10 marcation.

5. The apparatus as set forth in Claim 3, further comprising:  
15

a pair of arms respectively pivotally mounted upon said vehicle chassis and respectively pivotally mounted upon said pair of transport wheels so as to permit said vehicle chassis to be pivotally movable, with respect to said pair  
20 of transport wheels, between a first position at which said applicator wheel is able to be engaged with the roadway surface when it is desired to individually apply the pavement markers onto the roadway surface, and a second position at which said applicator wheel is elevationally disengaged from  
25 the roadway surface when it is not desired to apply the roadway markers onto the roadway surface.

30 6. The apparatus as set forth in Claim 5, further comprising:

a program logic controller (PLC) operatively connected to said conveyor belt drive means for driving said conveyor belt at a predetermined rate of speed such that a predetermined number of the plurality of pavement markers  
5 are conveyed along said conveyor means, discharged from said lower end portion of said conveyor means, and deposited onto the roadway surface at predeterminedly spaced locations along the roadway surface.

10

7. The apparatus as set forth in Claim 3, further comprising:

a third transport wheel mounted upon said vehicle  
15 chassis and disposed forwardly of said pair of transport wheels for cooperating with said pair of transport wheels for permitting said wheeled vehicle to be moved along the roadway surface.

20

8. The apparatus as set forth in Claim 3, further comprising:

a tow bar fixedly mounted upon said vehicle chassis so as to permit said wheeled vehicle to be towed by the  
25 roadwork vehicle; and

a hitch connector operatively interconnecting said tow bar of said vehicle chassis to a mounting bar of the roadwork vehicle;

30 said hitch connector comprising first hinge means disposed at a first end portion thereof for hingedly con-

necting said hitch connector to said tow bar of said vehicle chassis, and second hinge means disposed at a second end portion thereof for hingedly connecting said hitch connector to the mounting bar of the roadwork vehicle whereby said  
5 first and second hinge means of said hitch connector permit said wheeled vehicle to be elevationally movable independently of the roadwork vehicle.

10

9. The apparatus as set forth in Claim 8, wherein said hitch connector further comprises:

adjustment means interconnecting said first hinge means to said tow bar of said vehicle chassis for permitting  
15 transverse adjustment of said tow bar of said vehicle chassis with respect to the mounting bar of the roadwork vehicle so as to permit transverse positional adjustment of said wheeled vehicle with respect to the roadwork vehicle.

20

10. In combination, apparatus for automatically serially applying a plurality of pavement markers to a roadway surface, comprising:

25 a roadwork vehicle;

a wheeled vehicle;

hitch means operatively connecting said wheeled vehicle to said roadwork vehicle;

conveyor means, comprising an upstream end portion  
30 disposed at an upper elevational level so as to be accessible by an operator disposed upon said roadwork vehicle for

serially placing a plurality of pavement markers upon said conveyor, and a downstream end portion disposed at a lower elevational level for disposition immediately above the roadway surface onto which the plurality of pavement markers  
5 are to be deposited, for automatically serially conveying the plurality of pavement markers from said upstream end portion of said conveyor means to said downstream end portion of said conveyor means, for serially discharging the plurality of pavement markers from said downstream end portion of said conveyor means, and for serially depositing the  
10 plurality of pavement markers onto the roadway surface; and

applicator means disposed adjacent to said downstream end portion of said conveyor means for operatively engaging individual ones of the plurality of pavement markers,  
15 ers, deposited onto the roadway surface by said conveyor means, so as to serially apply the plurality of pavement markers to the roadway surface.

20

11. The combination set forth in Claim 10, wherein said conveyor means comprises:

a conveyor belt movably mounted upon said conveyor means;

25

a plurality of carrier elements fixedly disposed at predeterminedly spaced positions along said conveyor belt for respectively seating the plurality of pavement markers thereon so as to serially convey the plurality of pavement markers along said conveyor means; and

30

conveyor belt drive means operatively connected to

said conveyor belt for moving said conveyor belt along said conveyor means.

5

12. The combination set forth in Claim 10, wherein:

said wheeled vehicle comprises a vehicle chassis;  
a pair of laterally spaced transport wheels are  
mounted upon said vehicle chassis for permitting said wheel-  
10 ed vehicle to be moved along the roadway surface;

said lower downstream end portion of said conveyor  
means is fixedly mounted upon said vehicle chassis; and

said applicator means comprises a wheel applicator  
for rollably engaging individual ones of the plurality of  
15 pavement markers deposited onto the roadway surface by said  
conveyor means in order to individually apply the plurality  
of pavement markers to the roadway surface.

20

13. The combination as set forth in Claim 12, wherein:

said conveyor means comprises a pair of parallel  
conveyors; and

said applicator means comprises a pair of appli-  
25 cator wheels for respectively rollably engaging individual  
ones of the plurality of pavement markers deposited onto the  
roadway surface by said pair of parallel conveyors in order  
to individually apply the plurality of pavement markers  
along a pair of lines simulating traffic lane lines of de-  
30 marcation.

14. The combination as set forth in Claim 12, further comprising:

5 a pair of arms respectively pivotally mounted upon said vehicle chassis and respectively pivotally mounted upon said pair of transport wheels so as to permit said vehicle chassis to be pivotally movable, with respect to said pair of transport wheels, between a first position at which said applicator wheel is able to be engaged with the roadway surface when it is desired to individually apply the pavement markers onto the roadway surface, and a second position at which said applicator wheel is elevationally disengaged from the roadway surface when it is not desired to apply the roadway markers onto the roadway surface.

15

15. The combination as set forth in Claim 14, further comprising:

20 a program logic controller (PLC) operatively connected to said conveyor belt drive means for driving said conveyor belt at a predetermined rate of speed such that a predetermined number of the plurality of pavement markers are conveyed along said conveyor means, discharged from said lower end portion of said conveyor means, and deposited onto the roadway surface at predeterminedly spaced locations along the roadway surface.

30 16. The combination as set forth in Claim 12, further comprising:



a third transport wheel mounted upon said vehicle chassis and disposed forwardly of said pair of transport wheels for cooperating with said pair of transport wheels for permitting said wheeled vehicle to be moved along the roadway surface.

17. The combination as set forth in Claim 12, further comprising:

a tow bar fixedly mounted upon said vehicle chassis so as to permit said wheeled vehicle to be towed by said roadwork vehicle; and

a hitch connector operatively interconnecting said tow bar of said vehicle chassis to a mounting bar of said roadwork vehicle;

said hitch connector comprising first hinge means disposed at a first end portion thereof for hingedly connecting said hitch connector to said tow bar of said vehicle chassis, and second hinge means disposed at a second end portion thereof for hingedly connecting said hitch connector to the mounting bar of said roadwork vehicle whereby said first and second hinge means of said hitch connector permit said wheeled vehicle to be elevationally movable independently of said roadwork vehicle.

18. The combination as set forth in Claim 17, wherein said hitch connector further comprises:

adjustment means interconnecting said first hinge

means to said tow bar of said vehicle chassis for permitting transverse adjustment of said tow bar of said vehicle chassis with respect to said mounting bar of said roadwork vehicle so as to permit transverse positional adjustment of said wheeled vehicle with respect to said roadwork vehicle.

19. A hitch mechanism for interconnecting a towed vehicle to a towing vehicle, comprising:

a tow bar fixedly mounted upon a towed vehicle so as to permit the towed vehicle to be towed by a towing vehicle; and

a hitch connector operatively interconnecting said tow bar of the towed vehicle to a mounting bar of the towing vehicle;

said hitch connector comprising first hinge means disposed at a first end portion thereof for hingedly connecting said hitch connector to the tow bar of the towed vehicle, and second hinge means disposed at a second end portion thereof for hingedly connecting said hitch connector to the mounting bar of the towing vehicle whereby said first and second hinge means of said hitch connector permit the towed vehicle to be elevationally movable independently of the towing vehicle.

20. The hitch mechanism as set forth in Claim 19, wherein said hitch connector further comprises:

adjustment means interconnecting said first hinge

means to the tow bar of the towed vehicle for permitting transverse adjustment of the tow bar of the towed vehicle with respect to the mounting bar of the towing vehicle so as to permit transverse positional adjustment of the towed vehicle with respect to the towing vehicle.

21. A method for automatically serially applying a plurality of pavement markers to a roadway surface comprising the steps of:

automatically serially conveying a plurality of pavement markers, from an upstream end portion of a conveyor means to a downstream end portion of said conveyor means, for serially discharging the plurality of pavement markers from said downstream end portion of said conveyor means, and for serially depositing the plurality of pavement markers onto the roadway surface; and

disposing applicator means adjacent to said downstream end portion of said conveyor means for operatively engaging individual ones of the plurality of pavement markers, deposited onto the roadway surface by said conveyor means, so as to serially apply the plurality of pavement markers to the roadway surface.

22. The method as set forth in Claim 21, further comprising the step of:

using a wheel applicator for rollably engaging

individual ones of the plurality of pavement markers deposited onto the roadway surface in order to individually apply the plurality of pavement markers to the roadway surface.

5

10

15

20

25

30